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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/630,438

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Takao Tsuruoka

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VOLPE AND KOENIG, P.C.
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER

HENN, TIMOTHY J

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2622

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/630,438	Applicant(s) TSURUOKA, TAKAO	
	Examiner Timothy J. Henn	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 2-14, 18, 20, 26, 27, 29 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 15, 16, 19, 22, 23, 28, 30, 31, 33-35, 37, 39 and 40 is/are rejected.
- 7) ☒ Claim(s) 17, 21, 24, 25, 36, 38, 41 and 42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.
2. With respect to claims 28, 30 and 31, the examiner notes that these claims are directed to an image processing program only (i.e. functional descriptive material per se). Since there is no defined structural or functional relationships between the claimed program and other aspects of the invention which permit the program's functionality, the claims are considered non-statutory. Therefore, Applicants arguments with respect to these claims is not considered persuasive and the §101 rejection will be repeated below.

Information Disclosure Statement

3. The information disclosure statement filed 08 June 2007 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 28, 30 and 31 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

[claims 28, 30 and 31]

Claims 28, 30 and 31 claim an image processing program. However, claims 28, 30 and 31 as written do not define any structural or functional relationships between the claimed program and other aspects of the invention which permit the program's functionality to be realized and is therefore non-statutory subject matter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tariki (US 2002/0008766) in view of Kato et al. (JP 63-046077).

[claim 1]

Regarding claim 1, Tariki discloses an image pickup system comprising an image pickup element in which a plurality of pixels are arranged (Figure 1, Item 5), and A/D converter which creates digitized signals from the image pickup element (Figure 1, Item 11) and noise reducing means for reducing noise contained in the signals (Figure 1,

Item 13). However, the system of Tariki uses a separate exposure to capture dark current signals and does not disclose a noise estimating means as claimed.

Kato discloses a similar system for removing dark current signals from an image and further discloses that dark current signals can be calculated or “estimated” based on data such as the temperature of the image pickup element and accumulation time (Abstract). Such a system allows for removal of dark current without requiring a separate exposure during image capture. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to estimate the dark current noise values as described by Kato to remove the dark current noise from the image signals without requiring a separate exposure.

[claim 33]

Regarding claim 33, see claim 1 above.

8. Claims 15, 19, 22, 23, 34, 37, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tariki (US 2002/0008766) in view of Kato et al. (JP 63-046077) in view of Nishi (JP 11-317516).

[claim 15]

Regarding claim 15, Tariki in view of Kato disclose estimating noise components on the basis of a temperature, but do not disclose parameter calculating means as claimed. It is further noted that Kato does not explicitly how the temperature of the imaging device is determined.

Nishi discloses a system for determining the temperature of an imaging device by calculating the temperature from dark current signals (Abstract; note that dark current signals are provided by the image pickup device). Nishi discloses that this arrangement allows for temperature detection without increasing the production costs of the device. Therefore, it would be obvious to use the temperature detection system of Nishi to calculate the temperature (i.e. a parameter) for the device of Tariki in view of Kato. As described by Kato, the temperature would then be used to calculate an estimated noise as claimed.

[claim 19]

Regarding claim 19, Tariki in view of Kato in view of Nishi disclose parameter calculating means, but does not disclose averaging a plurality of pixel values in a nearby region. Official Notice is taken that the use of systems which average a plurality of pixels in a nearby region for, e.g. interpolation, resolution reduction, defective pixel correction, etc. are well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include pixel averaging to assist in interpolation, resolution reduction, defective pixel correction, etc. The examiner notes that claim 19 does not specify that the averaged pixel signal is associated with estimation of a noise value.

[claim 22]

Regarding claim 22, Tariki in view of Kato in view of Nishi disclose parameter calculating means, but does not disclose calculating a gain parameter. It is further noted that Tariki discloses an AGC system (Figure 1, Item 9) which amplifies the pixel

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signals "as needed" (Paragraph 0084). Official Notice is taken that the use of amplifier systems in imaging devices which amplify the pixel outputs by a calculated gain based on, for example, exposure information are well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use exposure information to calculate a gain value as claimed to determine when the pixel signals need to be amplified.. The examiner notes that claim 22 does not specify that the calculated gain parameter is associated with estimation of a noise value.

[claim 23]

Regarding claim 23, note that Tariki discloses performing automatic exposure control (i.e. calculating shutter speeds during the shooting from exposure information, Paragraph 0083).

[claims 34, 37, 39 and 40]

Regarding claims 34, 37, 39 and 40, see claims 15, 19, 22 and 23 above.

9. Claims 16 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tariki (US 2002/0008766) in view of Kato et al. (JP 63-046077) in view of Nishi (JP 11-317516) in view of Bloom (US 7,113,210).

[claim 16]

Regarding claim 16, Tariki in view of Kato in view of Nishi does not disclose a threshold on the noise estimating means as claimed. Bloom discloses a similar system in which noise values are subtracted from image signals. Bloom further discloses the use of a threshold for the noise components (Figure 3) to ensure that invalid pixel

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values are not introduced into the image (c. 3, ll. 19-27). Therefore, it would be obvious to include a threshold value for the noise estimating means to ensure that invalid pixel values are not created by the noise removal process.

[claim 35]

Regarding claim 35, see claim 16 above.

Allowable Subject Matter

10. Claims 17, 21, 24, 25, 36, 38, 41 and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

[claims 17 and 36]

Regarding claims 17 and 36, the prior art does not teach or fairly suggest setting an estimated noise value as a threshold value and reducing signal amplitude components which are equal to or less than the threshold value. While image processing systems which use thresholds to determine whether an image signal is to be processed (e.g. Peters et al. (US 5,563,962) ; Harada (US 7,133,072)) are known in the prior art, the specify processing method claimed is not taught or suggested.

[claims 21 and 38]

Regarding claims 21 and 38, the prior art does not teach or fairly suggest calculating a variance of signals in an OB region, estimating a temperature based on the calculated variances, estimating a noise amount based parameters determined from the temperature, signal values, the gain for the signals or the shutter speed and

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reducing the noise in the signals based on the estimated noise amount. While it is known in the prior art to estimate a temperature from OB signals (e.g. Rossi et al. (US 6,974,973); Cazier et al. (US 6,249,647) ; Cazier et al. (US 6,927,795)) and estimating noise signals to be removed from image signals (e.g. Prentice), estimating a temperature from the variance of OB signals and estimating a noise value to reduce noise in the image signals as claimed is not taught or suggested.

[claims 24, 25, 41 and 42]

Regarding claims 24, 25, 41 and 42, the prior art does not teach or fairly suggest calculating an amount of noise based on the equation:

$$N = (AL^B + C)D$$

wherein A, B, C and D are based on the functions: $a(T, G)$, $B(T, G)$, $C(T, G)$ and $D(S)$ as claimed. While calculating noise signals is known in the prior art (e.g. Prentice), the claimed equations are not taught.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571)272-7310. The examiner can normally be reached on M-F 11-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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4/10/2008

/Lin Ye/

Supervisory Patent Examiner, Art Unit 2622